PO-0953
Implementing IGRT in daily practice
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Purpose/Objective: In line with the implementation of new treatment methods like IMRT and RapidArc, where the margins are reduced and the treatment plans demand high accuracy in the daily treatment we felt obliged to have a closer look at our strategy for verification of the treatment field. Even though we already have used IGRT for prostate cancer patients since 2005, which was extended in 2009 to include patients with brain tumours, we decided to extend our IGRT strategy further to all patient groups. In our clinic we have 11 accelerators and treat about 260 patients daily.
Materials and Methods: In the autumn of 2010, we had our first meeting in an interdisciplinary group consisting of physicists, physicians and RTTs (nurses). The purpose of the group was to make an IGRT strategy for all patient groups. One of our challenges was our accelerators, which were of different models, resulting in 4 different verification systems - portal image, on board image (OBI), cone beam CT and Exactrac. The task of the group was to define which verification systems was best for which diagnosis, define margins for set-up uncertainties, whether to use bone or soft-tissue match, make plans for a physician/physicist control of the match and to educate the staff.
Results: In 2012, approximately 95 % of the treatments are image guided which is equivalent to 55.000 image guided treatments per year. To make the transition as smooth as possible, it was necessary to make a gradual transition. We started out testing the new strategy on 3 accelerators for 4 months, and all physicists, physicians and RTTs had a 2 hour theoretical lesson in the changes in their part of the treatment preparation and therapy. After that, the staff had hands-on lessons for a couple of hours. During the first 4 months, the interdisciplinary group met to make small adjustments. As of September 1. 2011 IGRT is a daily routine in our clinic.
Conclusions: The transition has not been as difficult as we could have feared. All members of the staff have worked together to make it happen. The RTTs say that it makes them feel more comfortable to give a high precision treatment now that they check every day that the positioning of the patient is correct. Reports of unintended events linked to IGRT has drop from 10 to fewer than 3 a year. The process of adjusting the IGRT strategy to changes in the clinic, new treatment methods and strategies is on-going.

PO-0954
Brachytherapy of periocular squamous cell carcinoma in the horse: treatment results in 104 cases (1999-2007)
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Purpose/Objective: The purpose of this study was to systematically analyse and evaluate the effectiveness of interstitial brachytherapy on periocular squamous cell carcinoma (POSCC) in horses in decreasing tumour recurrence rates. A further evaluation of treatment technique will define appropriateness of wire placement in relation to dose distribution parameters.
Materials and Methods: The study included records of 104 horses with histologically or clinically confirmed periocular squamous cell carcinoma (POSCC). The patients were treated in a rural Australian clinic between 1999 and 2007 with permanent Gold (Au^{198}) wire manually implanted without the use of radiation therapy specific planning software, dosimetry or expertise. Recurrence was defined as the post-irradiation regrowth of SCC at the same site of treatment. Follow-up information was obtained for 44 of the 104 cases. Treatment applications for each individual case (104) were modelled and replicated and dose distributions calculated through the use of Varian BrachyVision™ Treatment Planning Software.
Results: Recurrence was noted in 30 of the 44 cases where follow-up was evident (as reported via owner or veterinarian). The treated lesions were reported to have resolved in 14 of the 44 cases, however, follow-up information was not available for 60/104 cases.
Conclusions: The results of this study question the efficacy of brachytherapy treatment applications without appropriate radiation therapy planning, dosimetry and expertise. The results further support the need for protocol based treatment implementation within veterinary oncology to mirror current applications in human treatments and with a view to enhancing treatment outcomes with reference to recurrence rates.

POSTER: BRACHYTHERAPYTRACK: BREAST CANCER

PO-0955
Breast IORT by HDR-afterloading with a balloon catheter applicator is well tolerated
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Purpose/Objective: To report the tolerability of breast IORT using a single channel balloon catheter applicator.
Materials and Methods: From February 2011 to November 2012, we treated 60 patients aged 36 to 85 (median 63) years by intraoperative HDR-afterloading therapy intended as a tumour bed boost. According to ASTRO suitability criteria, 19 of them would have qualified for partial breast irradiation (PBI)only, 24 would have been considered cautionary. Patients were eligible for the method with cT1 (n=49) or small cT2 (n=11) tumours, no multicentricity, and a skin-tumour-distance of > 1.5 cm. Irradiation was performed using balloon catheter applicators with volumes of 35(n=50), 40(n=9) or 50 ml (n=1), resulting in 1 cm depth tissue doses of 8.9, 9.1 and 9.5 Gy, respectively. The intended dose of 20 Gy to the applicator surface was given in 51 patients. In 9 patients, irradiation was terminated early due to an excess in online-measured skin dose (limit set at 8 Gy). Breast volumes ranged from 317 to 3893 (median:1037) ml. According to ASTRO quality criteria for PBI, not more than 60% of breast volume should receive more than 50% of the prescribed dose in 1 cm tissue depth. This was fulfilled in all but two patients with breast volumes of 317 and 423 ml. Percutaneous whole breast irradiation (WBI) (50.4 Gy, 3D-conformal) in patients not receiving postoperative chemotherapy (n=38) was started 33 to 63 (median 42) days after IORT. In 22 cases, final histology revealed indications for chemotherapy. Whole breast irradiation(WBI) was performed thereafter, starting 138 to 238 (median: 171) days after IORT.
Results: Prolongation of anaesthesia due to irradiation time and transport was 40 minutes in mean. Measured skin dose ranged from 1.381 to 8.2 (median: 5.6) Gy. Acute side effect was a mild or moderate erythema in20% of patients decreasing till the start of WBI and then aggravating again. Edema was seen in 40% of patients some days after IORT, resolving till start of WBI, appearing again as a side effect of EBRT and decreasing again in the year after RT. Induration of the tumour bed started some days after IORT, resolved inpatients receiving postoperative chemotherapy before WBI, but was seen as a side effect of EBRT, slowly resolving during follow-up. Skin desquamation was seen only as a side effect of WBI. Patients receiving chemotherapy showed rather less side effects of WBI due to the prolonged time between IORT and EBRT.
Conclusions: The side effects observed after intraoperative HDR-balloon catheter afterloading plus WBI did not differ neither in quality nor strength from what we see in WBI plus percutaneous tumour bed boost. Thus, we consider the method to be a safe alternative to percutaneous boost and prefer it for boosting small breast cancers, as with the IORT application we are certain to reduce geographic miss of the tumour bed.

POSTER: BRACHYTHERAPY TRACK: GYNAECOLOGY

PO-0956
Effect of rectal distention on vaginal cuff brachytherapy
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Purpose/Objective: Rectal volume change is a proved source of variation during external beam radiotherapy. Vaginal cuff brachytherapy is one of the most widely and settle brachytherapy procedures wordwile. Some groups advocate a previous rectum cleansing, despite this fact no studies exist analysing the consequences of rectal distention during vaginal cuff brachytherapy. The aim of our study was to define how rectal distention affects dosimetric values on organs at risk.
Materials and Methods: CT sets (337) derived from 92 patients treated with vaginal cuff brachytherapy were re-segmented and re-planned for study purpose under the same parameters. Rectum DVH